Postsecondary Pathways and Persistence for STEM Versus non-STEM Majors Among College Students with an Autism Spectrum Disorder

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Abstract

Little is known about postsecondary pathways and persistence among college students with an Autism Spectrum Disorder (ASD). This study analyzed data from the National Longitudinal Transition Study-2, 2001-2009, a nationally representative sample of students in special education with an ASD who progressed from high school to postsecondary education. Findings suggest that most college students with an ASD enrolled in a 2-year community college at some point in their postsecondary careers (81%). Those in science, technology, engineering and mathematics (STEM) fields were more likely to persist in a 2-year community college and were twice as likely to transfer from a 2-year community college to a 4-year university than their peers in the non-STEM fields. College persistence rates varied by gender, race, parent education level, and college pathway and major. Educational policy implications are discussed.

Key words: Autism Spectrum Disorder, postsecondary pathway, 2-year community colleges, 4-year universities, persistence, science, technology, engineering, and mathematics (STEM)

Introduction

Over the past few decades the prevalence of autism spectrum disorder (ASD) has steadily increased. Most recent estimates indicate that 1 in 50 school-aged children in the United States have an ASD (Centers for Disease Control and Prevention 2013). The increasing prevalence of autism may be due to its expanded definition, resulting in rising numbers of individuals at the higher functioning end of the autism spectrum (Chakrabarti and Fombonne 2001). Individuals identified with high functioning autism have been shown to be successful in postsecondary education when provided with appropriate accommodations and supports (VanBergeijk et al. 2008; Jefferson-Wilson 1999). However, the majority (about 68%) of students with an ASD do not apply for admittance to higher education, do not get accepted to institutions, or drop out once they are there (Glennon 2001; Wei et al. 2012).

For many students with an ASD who have the capacity to pursue postsecondary education, science, technology, engineering and mathematics (STEM) courses may be particularly appealing as previous studies indicate that students with an ASD have relatively high rates of postsecondary STEM enrollment when compared to other disability categories and the general population (Wei et al. 2012; Chen and Weko 2009). Given the increasing interest in the United States to sustain a “world-class science and engineering workforce” in order to remain competitive in an increasingly technologically-driven global economy (Nagle et al. 2009), individuals with an ASD who pursue STEM college majors are well-placed to become significant contributors in this important and growing field.

However, high rates of college enrollment for either STEM or non-STEM majors may not necessarily translate into high rates of college persistence and graduation. While academically capable of college level work in principle, students with an ASD may struggle with

elements central to college life: socialization, new and changing routines and schedules, independent living, and a lack of external monitoring and guidance (Howlin et al. 2004; Jobe and White 2007). Consequently, students with an ASD who may have experienced success in high school may still struggle in higher education.

As the prevalence of ASDs continues to increase and students with an ASD graduate from high school in greater numbers, it is important to understand the postsecondary education pathways and college persistence of this group. Yet, to date, little research has examined the pathways students with an ASD employ once they are enrolled in postsecondary education, the factors associated with persistence in their educational achievement, or the interplay of these factors on their pursuit of a STEM major.

One viable postsecondary education pathway that may be particularly effective is enrollment in a 2-year community college. While little research has explored this pathway specifically for individuals with an ASD, studies of other traditionally underserved backgrounds, such as women and minorities, indicate that 2-year community college can be an important bridge from high school to employment, as well as a point of entry to 4-year universities (Ponticelli and Russ-Eft 2009; Malcom 2008). There is also evidence that 2-year colleges may be an appropriate alternate pathway for young adults pursuing STEM majors. For example, Fealing and Myer (2011) showed that community colleges prepare women and minority students for STEM degrees and careers by equipping them with prerequisite college preparatory-level math and science courses and helping them transfer to 4-year universities.

Many students with an ASD are capable of entering into the STEM pipeline and ultimately attaining STEM careers. Yet among college students with an ASD, little is known about their postsecondary pathways and persistence in college for STEM and non-STEM majors.

This paper seeks to answer these questions. Understanding postsecondary pathways and persistence among college students with an ASD will help professionals continue to develop strategies to keep students with an ASD in college, graduate with a college degree, and live independent and self-determined lives. Specifically, we address the following research questions:

1. What are the postsecondary pathways for STEM majors vs. non-STEM majors among college students with an ASD?
2. What are the persistence rates among STEM majors vs. non-STEM majors with an ASD following different pathways?
3. What are the associated factors of persistence among STEM majors vs. non-STEM majors with an ASD?

Method

Data

National Longitudinal Transition Study-2 (NLTS2) is the largest and richest national dataset currently available to study transition experiences from high schools to postsecondary education and postsecondary outcomes of students with disabilities. NLTS2 was conducted by SRI International for the U.S. Department of Education and collected data from parents and/or youth over five waves, two years apart, from 2001 to 2009. The initial sample included more than 11,000 high school students receiving special education services, ages 13 through 16 on December 1, 2000. About 1,100 of them received special education services in the autism category by the Individuals with Disabilities Education Act (IDEA). Each student's eligibility for special education services was determined by the school district from which the student roster was sampled. Although the criteria for autism identification in schools may differ from the criteria found in the Diagnostic and Statistical Manual of Mental Disorders (Fourth Edition)

(DSM-IV), more than 95% of children with a school designation of autism also meet DSM-IV-based case criteria in public health surveillance studies – suggesting the school label of autism is very specific (Bertrand et al. 2001; Yeargin-Allsopp et al. 2003).

The NLTS2 two-stage sampling plan first randomly sampled local educational agencies (LEAs) and state-supported special schools stratified by region, district enrollment, and wealth; then students receiving special education from rosters of LEAs or special schools were randomly selected in order to yield nationally representative estimates that would generalize to all students receiving special education services. Appropriate analysis weights for each instrument and each wave of data collection were used to produce estimates that can be generalized to the cohort of youth receiving special education services at the study's start in a given age range and disability type.

Participants

NLTS2 includes data about students with an ASD as well as students in other special education disability categories from multiple sources on a wide range of topics using parent/youth telephone interviews and mail surveys; school, teacher, and school program surveys; transcript data; and in-person student assessments and interviews. This paper used postsecondary data from parent and young adult telephone interviews and mail surveys at waves 2 (the first wave in which youth with ASD were old enough to go to college and report a college major) through 5. Information collected at each wave was reported by young adults with an ASD or their parents through either a telephone interview or a self-administered mail survey. Data were collected on an original sample of 920 young adults with an ASD and/or their parents at wave 1; 660 of them remained in the study at wave 5. The estimates in this report used cross-wave weights that were suitable for analyzing multiple waves of NLTS2 data (Valdes et al. in

press). These weights were computed by taking into account various young adult and LEA characteristics used as stratifying variables in the sampling and nonresponse in those strata at each wave and across waves. Unweighted sample sizes in this paper were rounded to the nearest ten, as required by the U.S. Department of Education.

Measures

Postsecondary enrollment in a 2-year community college or a 4-year university was measured by two survey items that asked if the youth ever attended a postsecondary institution (e.g., 2-year community college, or 4-year university) since leaving high school at each wave beginning wave 2. Based on four sets of postsecondary enrollment variables from waves 2 through 4, three different college pathways were created: 1) student only attended 2-year community college; 2) student attended both 2-year community college and 4-year university; and 3) student attended 4-year university only.

Parents and young adults also answered questions about the course of study at a 2-year community college or a 4-year university at each wave. This study used the National Science Foundation's definition of STEM: "all fields of fundamental science and engineering" (National Science Foundation 2006). An indicator for majoring in STEM fields was coded affirmatively if the youth or parent reported a college major that aligned with this definition, including majors such as computer science, programming, information technologies, engineering, mathematics and statistics, science, biology, earth science, geology, physics, chemistry, and environmental science. All other majors were coded as non-STEM majors at each wave.

Parents and young adults also provide reasons why the youth stopped attending a postsecondary institution, including graduated or completed the degree, or dropped out of the

program[1]. College persisters, STEM persisters, and non-STEM persisters were defined differently based on the convention in the literature (Chen and Ho 2012). College persisters include students with an ASD who 1) continued pursuing college education until the last wave of data collection –wave 5 in 2009, or 2) graduated or completed a college degree during four waves of data collection. STEM persisters include students with an ASD who 1) started as a STEM major and remained in STEM fields throughout their college until the last wave of data collection, 2) started as a non-STEM major but switched to a STEM major before/during the last wave of data collection, or 3) graduated or completed a STEM degree during four waves of data collection. STEM non-persisters include students with an ASD who 1) dropped out of a postsecondary STEM major with or without a reason, or 2) switched to a non-STEM major and never switched back to a STEM major as of the last wave of data collection. Following the same logic, non-STEM persisters include three types of students: persisters in non-STEM majors, switchers from STEM majors to non-STEM majors, or completers of non-STEM degrees. Non-STEM, non-persisters include dropouts and those who switched to STEM majors. Because the sample sizes for each of the subtypes of persisters or non-persisters were small, they were combined into "persisters" or "non-persisters", respectively.

Correlates were measured at wave 1. Demographic characteristics included in the analysis were derived from known correlates of college persistence that have been cited in the literature: young adults' gender, age, race/ethnicity, annual household income, and whether parents ever attended postsecondary education. Black, Hispanic, or other ethnicity (Asian/Pacific Islander, American Indian/Alaska Native, and multiracial students) were combined into minority

[1] The reasons for dropping out of postsecondary institutions include high cost, transportation issues, moved, did not like school, cannot get along with friends, cannot get along with professors, friends dropped out, poor grades, safety issue in school, did not get services needed, changed schools, finished the classes youth wanted to take, need to get a job, no time or have other conflicts, did not get into the program youth wanted, illness/disability, got married, got pregnant, travel, or entered the military.

group to achieve adequate sample size for analysis. Parent-reported conversation ability was used to reflect the degree of disability as it pertains to communication skills and was rated as 1=converses just as well as others, 2=has a little trouble carrying on a conversation, or 3=has a lot of trouble carrying conversation or does not carry a conversation at all.

Analysis

All analyses were performed on SAS 9.2 (SAS Institute, Cary, NC). SAS PROC SURVEY Taylor Series Linearization method was used to account for the complex sampling design and provide the exact estimate of the standard errors. Prevalence rates were estimated and chi-square tests were conducted to provide descriptive analyses on the student background characteristics (gender, age, race/ethnicity, annual household income, parents' postsecondary education, conversation ability), types of postsecondary pathways, and persistence rates by postsecondary pathway. Descriptive analyses were presented for all college students with an ASD, as well as those with STEM majors and those with non-STEM majors. For college students with an ASD, logistic regression models were used to predict college persistence based on student background characteristics, postsecondary pathway, and college major. In addition, among STEM majors, logistic regression models also were conducted to examine the association between background characteristics, postsecondary pathway, and persistence. Cross-wave weights provided by NLTS2 were included in all regression models so that the results could be generalized to the national population of students with an ASD. Among college students with ASD (N=210), there were no missing data for the postsecondary pathway variable, and 10% missing data for the postsecondary major variable, which reduced the sample size to 190. The

missing data rates on correlates ranged from 1% to 5%[2], which further reduced the sample size to 160. Missing data, 24% of the total sample size 210, were list-wise deleted[3] in the logistic regression models. No correction for multiple comparisons was applied to the analysis.

Results

Table 1 shows the background characteristics of college students with an ASD. Although the population of college students with an ASD was disproportionately male (85.03%) and White (81.15%), STEM majors were even more likely to be male (94.02% vs. 80.55%; χ^2=5.96, p =0.01) and White (90.60% vs. 76.63%; χ^2=5.02, p =0.01) than non-STEM majors. STEM majors with an ASD and their peers in non-STEM majors were both more likely to be in the highest income category (43.84% vs. 41.25% >$75,000 annual household income; χ^2=3.92, p =0.48). STEM majors with an ASD reported less difficulty with conversation than non-STEM majors (9.72% vs. 25.53% reported to have lots of trouble or cannot have a conversation at all; χ^2=9.99, p =0.02).

<Table 1>

College pathway analysis shows that a total of 81.34% of college students with an ASD attended a 2-year community college (49.73% only attended a 2-year community college and 31.60% attended both a 2-year and a 4-year college), compared to 18.67% who entered a 4-year university directly after high school (Table 2). When comparing college pathways between STEM and non-STEM majors for students with an ASD, a lower percentage of STEM majors attended only a 2-year community college or only a 4-year university (2-year: 35.94% and 4-year: 15.34%) than non-STEM majors (2-year: 56.61% and 4-year: 20.33%); however, a higher

[2] There were 4%, 0%, 5%, 1%, 5%, and 1% of missing data on age, gender, race, annual household income, whether parent attended postsecondary education, and youth's conversation ability, respectively.

[3] Missing data rates were low on the correlates; consequently, imputation was not conducted for the correlates.

percentage of STEM majors attended both a 2-year community college and a 4-year university (48.72%) than their peers in non-STEM majors (23.06%). The chi-square tests showed that STEM majors and non-STEM majors differed in their college pathways (χ^2 = 12.85, p = 0.002).

<Table 2>

Table 3 provides percentages of persisters vs. non-persisters in three types of college pathways between STEM and non-STEM majors. Among college students with an ASD who started at a 2-year community college and only attended a 2-year community college, STEM majors were significantly more likely to persist than their peers in non-STEM majors (80.68% vs. 47.39%, χ^2=12.67, p <0.001). Among college students who only attended a 4-year university, there was no difference in persistence rates between STEM majors and non-STEM majors (χ^2=0.01, p = 0.90). Similarly, among college students with an ASD who attended both a 2-year community college and a 4-year university, no differences in persistence rates between STEM and non-STEM majors were found (χ^2=3.38, p =0.16).

<Table 3 >

Weighted logistic regression models were used to examine the correlates of college persistence among all college students, college STEM majors, and college non-STEM majors (Table 4). STEM majors with an ASD were more likely to persist than non-STEM majors with an ASD (OR = 3.78, p < 0.01). Among all college students with an ASD, male students had significantly higher odds of persisting in college than their female peers (OR = 4.98, p < 0.01). Male advantages in persisting in STEM majors were also found (OR = 16.29, p < 0.001). Minority college students with an ASD had significantly higher odds of persisting in college than their White counterparts (OR = 2.54, p < 0.05). This was also true among STEM majors (OR = 21.04, p < 0.05). College students with an ASD whose parents attended postsecondary education

institutions had higher odds of persisting in college than their peers whose parents never attended postsecondary education institutions (OR=14.00, $p < 0.05$). The same association was also found for non-STEM majors (OR=10.38, $p < 0.05$). Compared to students with an ASD who attended both a 2-year community college and a 4-year university, their peers who attended 2-year only (OR = 0.04, $p < 0.01$) or 4-year only (OR = 0.05, $p < 0.01$) had significantly lower odds of persisting in college. The same results were also found for STEM and non-STEM majors. Significant only for non-STEM majors, students with an ASD who had more trouble conversing had higher odds of persisting in non-STEM fields than their peers who had less trouble conversing (OR = 1.94, $p < 0.05$).

<Table 4 >

Discussion

This study provides a national picture of college pathways and persistence for college students with an ASD. In the general population, somewhere between 29% and 37% of college students attend 2-year community colleges (Bureau of Labor Statistics 2012; U.S. Census Bureau 2012; Snyder and Dillow 2012). Our findings suggest a much higher percentage for students with an ASD: 81.33% of college students with an ASD enrolled in a 2-year community college at some point in their postsecondary careers. This proportion is similar to the 64-81% 2-year community college enrollment rates among students enrolled in any type of postsecondary institution across 12 disability categories as reported by Newman and colleagues (2011b).

These findings provide empirical evidence to support the theory that community colleges are an important and well-used alternate pathway for students from disadvantaged backgrounds (Fealing and Myer 2011; Gandara et al. 2012; Roksa et al. 2010). For students with an ASD who are interested in pursuing postsecondary education, community colleges are an affordable option,

which may provide a smoother transition to the academic and social challenges that can arise in a university setting. For some students with an ASD who have not graduated from high school, community colleges may be a promising route to further advance their training and education, as some states, such as California, have an age requirement, but do not require a high school diploma in order to enroll in a community college (Ponticelli and Russ-Eft 2009). Given the high percentage of students with disabilities who do not obtain high school diplomas and the role community colleges can play in advancing education and employment opportunities for students with disabilities, future research needs to critically examine exactly how 2-year community colleges can support college students with an ASD; for instance, through accommodations, services, and supports that are tailored to their needs, or by providing additional consulting and transition services to those who would like to pursue 4-year universities.

Although most college students with an ASD began their postsecondary education in a 2-year community college, we found that those majoring in science, technology, engineering and mathematics (STEM) fields were twice as likely to transfer from community colleges to 4-year universities than their peers in the non-STEM fields. The logistic regression results also showed that STEM majors were more likely to persist in their education than non-STEM majors. A desire to persist in STEM degrees may be a reflection of an individual with an ASD's innate ability or drive to construct a rule-based system, a skill that is particular relevant in STEM-related fields (Baron-Cohen 2009, 2006). While other studies have shown that students with an ASD gravitate toward STEM fields (Baron-Cohen et al. 2007; Wei et al. 2012), it appears that they also tend to persist and further pursue higher level degrees in STEM, at 4-year universities.

Fealing and Myer (2011) indicated that community college is especially helpful for women and minority students who pursue a STEM degree because it can provide them with

important prerequisite college preparatory-level math and science courses that prepare them for a 4-year university degree. This theory can also be applied to college students with an ASD, who may need a longer transition period between high school and an independent 4-year university. In fact, community colleges may be a particularly ideal setting for students with an ASD as they enable the student to receive a post-secondary education while often still remaining at home, thus providing the continuity of a supportive and consistent environment. Therefore, an important policy implication derived from these findings is to take advantage of community colleges' well-positioned role as a critical stepping stone for additional postsecondary education or entrance into the workforce; for instance, by providing community college professionals with professional development opportunities and an adequate infrastructure that will enable them to provide high quality transition planning services to students with an ASD.

The relatively low college persistence rates among students in the general population raises concerns about America's future competitiveness in the world economy; national statistics indicate 52% persisting among bachelor's degree candidates and 31% persisting among associate's degree candidates for STEM majors, with similar persistence rates for non-STEM majors (Chen and Ho 2012). By comparison, the college persistence rates among students with an ASD who only attended a 2-year community college are much higher: 80.68% for STEM majors vs. 47.39% for non-STEM majors, a statistically significant difference in persistence rates.. However, the differences in persistence rates between STEM and non-STEM majors were not significant among those who only attended a 4-year university or those who attended both a 2-year and a 4-year college. The finding that STEM majors were more likely to persist in a 2-year community college than non-STEM majors emphasizes the important role of community colleges in increasing STEM participation rates and persistence rates for college STEM majors

with an ASD. Future research needs to further explore the barriers to college persistence and how these may vary depending on the field of study in order to determine the specific supports and services that can contribute to higher persistence and graduation rates for students with an ASD in both STEM and non-STEM majors.

This study found a gender gap in the odds of college persistence favoring males among college students with an ASD. This gender disparity contradicts findings in the general population, where females have advantages over males in grade point average, credits earned, and persistence (Conger and Long 2010). Our study suggests that increasing college persistence among females is an even greater issue for those with an ASD than those in the general population.

This study also found a racial gap in college persistence favoring minority students with an ASD, which is contradictory to the advantages that White students have in the general population (Anderson and Kim 2006). The reason for this finding is unclear, and future studies are needed to validate these results.

We found that college students with an ASD overall, as well as those with non-STEM majors, were more likely to persist in college if their parents had attended a postsecondary school. This finding is consistent with the positive correlation between college enrollment and parents' educational attainment found in other studies focusing on students in the general population (Choy 2001). Thus, one policy recommendation to increase college persistence rates may be to target students with an ASD whose parents did not attend college and provide them with college outreach and retention programs.

This study has several limitations. First, an ASD diagnosis was based on school district reports of students receiving special education services under the autism category. Consequently,

students with an ASD who were not qualified for special education services were not included in this study, which limits our ability to generalize findings to the total population of young adults with an ASD. Second, the analyses were correlational and do not support causal inferences. Third, we did not have norm-referenced measures of symptoms or disability severity, and could only rely on parent-reported conversation ability as a proxy for the degree of disability pertaining to communication skills. Fourth, differences between the design of NLTS2 and other national studies might have contributed to the variation in persistence rates between the ASD group and students in the general population. NLTS2 used a cohort sequential design in which different age cohorts of students (age 13 to 17 in 2001) were tracked for nearly 10 years, whereas a comparison general population studies (Chen and Ho 2012) tracked a single cohort of freshmen over 6 years or longer to measure persistence. Fifth, data on course enrollment were not available for all waves of the NLTS2 dataset, limiting our understanding of whether the number of courses taken may impact college persistence. Lastly, the persistence measure used in this study was unable to capture whether or not all persisting students eventually graduated from college, or how long it ultimately took students to receive a college degree. Given the current economic climate, in which many students in the general population are extending their college education beyond the traditional 2- or 4-year length of time, it is possible that students with an ASD may enter and exit the postsecondary education system for many years before ultimately receiving their degree. Future studies may require longer time frames if they are to comprehensively examine the college graduation rates of students with an ASD.

Table 1
Descriptive statistics for college students with an ASD who reported any major across 2001 through 2009, weighted %

Measures	All	STEM major	Non-STEM major
Gender			
Male	85.03%	94.02%	80.55%
Female	14.97%	5.98%	19.45%
		χ^2=5.96, p =0.01	
Age at wave 1(2001)			
13	7.06%	7.29%	6.95%
14	23.30%	17.52%	26.05%
15	21.59%	17.10%	23.73%
16	24.47%	34.07%	19.89%
17	23.59%	24.02%	23.38%
		χ^2=5.28, p =0.54	
Race			
Minority (Black, Hispanic, or other)	18.85%	9.40%	23.37%
White	81.15%	90.60%	76.63%
		χ^2=5.02, p =0.01	
Annual household income			
≤$25,000	7.95%	4.58%	9.62%
$25,001-50,000	23.56%	30.55%	20.10%
$50,001-75,000	26.38%	21.03%	29.03%
Over $75,000	42.11%	43.84%	41.25%
		χ^2=3.92, p =0.48	
Parents education			
Attended postsecondary ed	86.45%	84.03%	87.61%
Never attended postsecondary ed	13.55%	15.97%	12.39%
		χ^2=0.43, p =0.74	
Conversation ability			
Lots of trouble or cannot converse	20.46%	9.72%	25.53%
Little trouble	54.85%	71.29%	47.08%
No trouble	24.69%	18.99%	27.39%
		χ^2=9.99, p =0.02	
Unweighted N	190	60	130
Weighted N	2679	893	1787

Source: NLTS2, waves 1 through 5. Percentages were weighted to population levels. Unweighted N was restricted to youth who attended postsecondary education and reported a major and rounded to the nearest 10, as required by Institute of Education Sciences. Percentages were weighted to population levels.

Table 2

Pathways to postsecondary STEM majors vs. Non-STEM majors among college students with an ASD, 2001 to 2009, weighted %

Type of postsecondary institutions	Weighted %		
	All	STEM major	Non-STEM major
Attended 2-year only	49.73%	35.94%	56.61%
Attended both 2-year and 4-year	31.60%	48.72%	23.06%
Attended 4-year university only	18.61%	15.34%	20.33%
Total weighted N (%)	2679 (100%)	893 (100%)	1787 (100%)
		$\chi^2 = 12.85$, $p = 0.002$	

Source: NLTS2, waves 1 through 5.

Notes. Unweighted N = 190. Percentages were weighted to population levels.

Table 3
Persistence in college among students with an ASD, 2001 to 2009, weighted %

Persistence status by postsecondary pathway	Weighted %		
	All	STEM major	Non-STEM major
Attended 2-year community college only			
Persisters	57.50%	80.68%	47.39%
Non-Persisters	42.50%	19.32%	52.61%
Total weighted N (%)	1319 (100%)	321 (100%)	998 (100%)
		χ^2=12.67, $p < 0.001$	
Attended both 2-year and 4-year university			
Persisters in both 2-year and 4-year	69.54%	58.85%	80.83%
Non-Persisters in both 2-year and 4-year	6.49%	7.13%	5.83%
Non-Persisters in 2-year & persisters in 4-year	13.46%	20.46%	6.31%
Persisters in 2-year and non-persisters in 4-year	10.51%	13.56%	7.04%
Total weighted N (%)	847 (100%)	435 (100%)	412 (100%)
		χ^2=3.38, $p = 0.16$	
Attended 4-year university only			
Persisters	69.55%	70.67%	68.87%
Non-Persisters	30.45%	29.33%	31.13%
	500 (100%)	137 (100%)	363 (100%)
		χ^2=0.01, $p = 0.90$	

Source: NLTS2, waves 1 through 5.
Note. Unweighted N = 190. Percentages were weighted to population levels.

Table 4
Logistic regression models reporting odds ratio and confidence intervals predicting college persistence for all majors, STEM majors, and in non-STEM majors among students with an ASD

Measures	Persist in college OR [CI]	Persist in STEM major OR [CI]	Persist in non-STEM major OR [CI]
Age	0.99 [0.67, 1.49]	1.94 [0.66, 5.68]	0.91 [0.59, 1.41]
Male	4.98** [1.56, 15.89]	16.29*** [3.56, 74.49]	3.08 [0.90, 10.51]
Female	ref	ref	ref
Minority (Black, Hispanic, or other)	2.54* [1.00, 6.42]	21.04* [2.00, 21.66]	2.29 [0.88, 5.93]
White	ref	ref	ref
Annual household income	0.96 [0.85, 1.08]	1.02 [0.77, 1.36]	0.96 [0.83, 1.11]
Parents attended postsecondary education	14.00* [2.10, 93.16]	27.07 [0.55, 93.16]	10.38* [1.14, 76.13]
Parents never attended postsecondary education	ref	ref	ref
Conversation ability	1.75 [0.98, 3.13]	0.50 [0.04, 6.93]	1.94* [1.11, 3.38]
Postsecondary pathway			
2-year community college	0.04*** [0.01, 0.16]	0.03* [0.006, 0.19]	0.03*** [0.005,0.15]
4-year university	0.05** [0.02, 0.18]	0.01* [0.003, 0.06]	0.04* [0.01, 0.19]
Both 2-year and 4-year	ref	ref	ref
College major			
STEM major	3.78** [1.59, 9.01]	NA	NA
Non-STEM major	ref		

*$p < .05$, **$p < .01$, ***$p < .001$.
Source: NLTS2, waves 1 through 5. ref=reference group. NA=not applicable.

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